International Labour Organization | ACT/EMP

Enabling business mitigation and adaptation to climate change

Green policies and the role of Employer and Business Membership Organizations

Executive Summary

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▶ Executive Summary

Emissions of greenhouse gasses into the Earth's atmosphere by the combustion of fossil fuels have increased exponentially since the end of the nineteenth century, in line with global GDP per capita. In our modern economy, growth has been based on affordable and readily available energy; provided by fossil fuels. To avert the worst impacts of climate change and preserve an inhabitable planet, global temperature increase needs to be limited to 1.5°C above pre-industrial levels. The Earth is about 1.1°C warmer than in the late 1800s, and emissions continue to rise. To keep global warming to no more than 1.5°C – as called for in the Paris Agreement – emissions need to be reduced by 45% by 2030 and reach net zero by 2050. Under the current trends, climate change could cut global income by $23 trillion in 2050, which amounts to 14 percent of global income (Mumenthaler, 2021). This report aims to identify policies and strategies to enable business adaptation to and mitigation of climate change.

Several countries and firms have put forward pledges to reach a net-zero economy. Net-zero means cutting greenhouse gas emissions to as close to zero as possible, with any remaining emissions re-absorbed from the atmosphere, by oceans and forests, for instance. However, this does not mean cutting economic growth, which is still needed to lift millions of people from poverty. Decoupling, the separation between economic growth and increased per-capita emissions, is at the core of sustainable development. Global economic activity today produces 1/3 fewer emissions per dollar of GDP than in 1990. However, decarbonization needs to be faster: if emissions per GDP were halved by 2050, there would be no improvement in the total amount of emissions released into the atmosphere each year. This is the size of the challenge that policymakers, enterprises, and employers, and business membership organisations (EBMOs) face: emissions need to decrease faster than incomes increase. This report covers the critical steps firms must take to adapt to climate change and climate policy and the barriers that need to be overcome to achieve a just transition that leads the global economy to net zero, with an emphasis on the additional hurdles faced by small and medium enterprises (SMEs). The report provides EBMOs with an overview of their role in accomplishing this challenge.

Barriers to business adaptation to climate change across regions and sectors

Climate change has enormous costs for enterprises: it cut global income by $23 trillion in 2050, approximately 14 percent of global income. The optimal policy mix will entail a combination of mitigation and adaptation that allows enough flexibility to encompass this heterogeneity. Mitigation, in this context, implies the reduction of emissions and prevention of the worst aspects of gradual climate change (GCC). Adaptation to climate change entails preparedness and resilience to face the unavoidable effects of the damage that has already been done. There is growing international interest in the planning, financing, and implementation of adaptation measures. In its early days, this discussion focused on the public sector's role, with the private sector viewed primarily as a source of funding or financing. Increasing attention is being paid to how the private sector responds to the risks and opportunities of climate change. However, there are some deep knowledge gaps in climate impacts for enterprises, what climate policies they should promote, and how hard it will be to transition to production modes compatible with the goals currently established to avoid the worst-case scenarios.

Large corporations generally have the financial resources, knowledge, and managerial structure to plan for and invest in the adaptation necessary to ward off the most damaging short-term effects. There is enough data for large firms to determine that it is cheaper to manage these risks than tackle them when they hit. SMEs, by contrast, are less well-equipped in this regard and, are the primary focus of this report. Despite their heterogeneity, SMEs have many common characteristics that influence their approach to environmental issues and the implementation of green practices (OECD, 2018): ownership and management are concentrated in the same hands, the entrepreneur is very likely to suffer from necessary time and task pressure, the entrepreneur faces information barriers about opportunities of the relevant green practices, their costs, and benefits, is often risk-averse given the relatively small economic size of the enterprise and finally, is likely financially constrained.

Regional barriers to business adaptation

SMEs in LDCs generally face greater hurdles in adaptation. According to the IPCC, LDCs are most likely to be affected by climate change, and the least likely to be able to adapt (Chambwera, 2009). Most LDCs rely heavily on agriculture, making managing a more extreme water cycle particularly crucial. Water management is also one of the costliest sets of adaptation measures, whether it be storage and distribution at the national level, or day-to-day management by small and subsistence farmers who may face more droughts, floods, or both. EBMOs are uniquely equipped to help disseminate information at the local level, such as by way of introduction to new crop varieties or sharing of best practices.

Another critical factor in building resilience against climate shocks that exhibits regional barriers is climate insurance. Even in the developed world, insurers are having difficulty in quantifying, and thus pricing, risk. These barriers to resilience are only magnified in LDCs, as they will face the brunt of climate change. In the developing world, vulnerable populations will be disproportionately affected, and insurance costs will be higher, if insurance is available at all. EBMOs can work with local enterprises to identify specific needs, and then advocate to insurers and policymakers on their behalf.

Barriers to energy transition in the private sector

In its broadest context, the energy transition can be considered two central constructs. The first is increasing energy efficiency, i.e., achieving the same productive output while using less energy. The second is the transition to energy sources that are not dependent on fossil fuels.

Increasingly, large multinationals have been pledging to achieve net zero. Still, even large enterprises face significant barriers to the energy transition, one of the largest is the simple reality of the scarcity of sustainable energy alternatives. Another barrier applicable to larger enterprises is the cross-sectoral nature of energy transition. It must be a collaborative effort to have a meaningful impact, encompassing the full spectrum of stakeholders involved.

The role of SMEs in the energy transition is crucial. SMEs comprise 99% of the enterprises in the EU, employ 60% of the total workforce, and account for 13% of global energy demand. Some 86% of those enterprises are micro-enterprises with fewer than ten employees (Franklin-Mann, 2021). In the case of SMEs, barriers are usually more pervasive and more obstructive. Most SMEs need to gain the necessary knowledge and expertise to make intelligent and sustainable choices. They are not likely to have in-house sustainable energy departments or managers. Many are daunted by the timeframes involved. They are less likely to have access to capital, and even when assistance programmes exist, they are not always likely to know about them.

Barriers to skills development transition

The transition to a low-carbon and sustainable economy will necessitate an entirely new skill set on the part of the majority of workers in all regions and all countries, one that can be defined as having "the knowledge, abilities, values, and attitudes needed to live in, develop and support a sustainable and resource-efficient society" (OECD, 2017b). Green skills may include adaptive capacity, from the modification of products, services, and physical infrastructure, as well as the overhaul of operations, including new managerial responsibilities, focused on navigating the regulatory framework, designing and implementing environmentally sustainable adaptive actions, and managing change.

A fundamental challenge to upgrading skill sets in LDCs is the dearth of any such meaningful skills in the first place in many labour markets. Opportunities for higher education are severely limited, and there exists a paucity of STEM graduates upon whom to tap for jobs in the green economy (Strietska–Ilina & Mahmud, 2019). This is a systemic capacity issue. Finally, women in the wealthiest nations and LDCs are significantly underrepresented in STEM education. If the special barriers women and minorities face to acquire these skills are addressed, they can significantly add to the skilled labour pool for climate change adaptation specialists.

Barriers to technological transition

Barriers related to technological transition affect both the innovation (the development phase) and the diffusion phase involving the distribution and uptake of the technology in question. There may be a significant time lag before an effective technological advancement in a wealthier nation may take root in an LDC, simply due to informational barriers. Financial barriers also exist, including the lack of financing for SMEs, particularly in LDCs, but in the developed world. It is inherently difficult for an enterprise, especially a smaller one, to procure financing for adaptation measures solely based on anticipated cost savings in the future.

Current barriers to technology diffusion include a lack of incentive for those initiating the technological transfer. Technology transfer involves the exchange of products and equipment (embodied technical transfer), and the exchange of knowledge and expertise (disembodied technological transfer) (Popp, 2012). The transfer typically occurs through international trade, foreign direct investment (FDI), and licensing. If existing trade legislation and regulatory frameworks have not been optimized for the transfer of technology; they may impede the transfer.

Radically transformative technologies will ultimately be required for long-term sustainability. Examples include nuclear fusion, cheap hydrogen, and new carbon capture sequestration techniques. Sustainable Earth points to three obstacles for enterprises in this respect. The first is risk: long-term risk-taking for unproven technologies is beyond the capacity of existing private capital markets due to the massive amounts of up-front capital involved and the lack of assurance that a meaningful technological breakthrough will ultimately occur. The second is a weak incentive structure for private enterprises, where the risks of knowledge spillover are significant, for example through reverse-engineering. Finally, new green technologies often face an unfair competitive landscape vis-à-vis the "brown" incumbents, who are often subsidized, or who have reaped the benefits of earlier investment in a less stringent regulatory environment (Söderholm, 2020).

Barriers associated with poor business performance and the productivity trap

A growing and prosperous enterprise, one that caters to the needs of all of its stakeholders, one that has healthy free cash flow and a strong balance sheet, is much better positioned to invest in climate adaptation measures. This does not mean that they are necessarily aware of the threat, but once they are, they are in a better position to act. As discussed, it is much cheaper to address a problem through anticipatory adaptation measures than to deal with the costly aftermath of an EWE.

Conversely, an enterprise with poor performance metrics, or struggling even to survive is not at all likely to be focused on long-term climate adaptation issues. There is not the time, nor probably the human capital to address the issue when problems are day-to-day in nature in terms of keeping the business afloat. As previously indicated, adaptation measures can be expensive, and they require investment now without any quantifiable metrics for a return. Climate adaptation is not generally a priority for enterprises on shaky financial ground. As a result, to advance overall participation in adaptation, the aforementioned "whole-of-society" approach must be incorporated to

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ensure that enterprises have the resources they need to be profitable in the first place. This also points to the need to develop coherent policy frameworks to foster sustainable enterprise development.

Most micro and small enterprises (MSEs) face challenges to reach a minimum efficient scale and economic viability, particularly in developing and emerging-market economies. They to tend to be caught in a low productivity trap, which translates into low revenue, low savings and investment rates, lack of or insufficient capital accumulation, and lack access to credit. This creates a vicious circle of low productivity-poor business performance-business stagnation, which has implications on the quality and quantity of job creation, and on their ability to adopt business adaptation measures. Hence, fostering MSME productivity growth using a holistic approach is indispensable to enable business mitigation and adaptation to climate change.

Barriers associated with institutions and regulatory frameworks

Institutional barriers to adaptation include uncertainty, fragmentation, the existence of an institutional void, and conflicting time horizons. When different types and levels of uncertainty are combined, they accumulate to the point of becoming a serious inhibitor of effective decision-making (Biesbroek, Termeer, Kabat, and Klostermann 2009). Fragmentation of leadership or steering mechanisms can result in intractable conflict and policy stagnation. A third factor is that of the institutional void. It may be that there simply are no climate adaptation institutions in place or that there is a lack of formal rules and coercive mechanisms to ensure that policymakers define appropriate long-term adaptation-related policy. Finally, there is an inherent conflict between long-term adaptation strategies and the short-term perspectives of politicians who may be looking to be re-elected or focused on other more immediate issues.

In 2015 the UN agreed upon the 2030 Agenda for Sustainable Development, which set forth 17 sustainable development goals (SDGs), and provided for a wide range of targets, actions, and research to support these aims. One such target, SDG 17.14, seeks to improve policy coherence for sustainable development (PCSD) (Soria Morales, 2018). PCSD seeks to ensure that institutional and governance mechanisms are both effective and inclusive. Single-sectoral approaches cannot achieve the 2030 Agenda. PCSD seeks to 1) identify where critical interactions lie, 2) enhance policy coherence by strengthening institutional and governance mechanisms, 3) monitor and report to collect evidence on the benefits of policy coherence, and 4) engage in partnerships across a broader range of stakeholders (OECD, 2019).

What needs to change?

Addressing climate change requires a far-sighted approach which is often at odds with the more short-term focus that electoral cycles incentivize. Policymakers would be wise to strengthen institutional resiliency towards long-term climate and adaptation goals to insulate them from the vagaries of changing political parties and landscapes.

The knowledge gap and technological transfer are critical areas highlighted throughout the report. It is essential to address the lack of awareness of the need for green skills in the future by enterprises and workers alike. Policy makers should work to boost capacity at local levels to support job creation in a green economy, by investing more in green-specific skills training opportunities. They should also seek to find a way to incentivize technology transfer, recognizing that the costs and benefits are rarely in alignment, and that existing trade frameworks are prone to creating distortions in the market through tariffs and other restrictions.

The lack of funding is one of the most onerous barriers to climate adaptation. As of 2019, developed nations had still not met their Paris-based funding commitments of $100 billion annually, even though this target remains woefully short of what is going to be required. Policy makers need to effectively coordinate access to what financing is available for the most vulnerable groups, especially in LDCs. Greater investment in climate adaptation measures today is cost-effective. In addition, policy makers need to work with the insurance industry, to ensure its continued economic viability and that climate-specific offerings are both available and fairly priced. EBMOs have an important role to play here. Finally, there is also a need to prioritize new partnerships that can support climate adaptation. The public

sector has an essential role in helping prepare a framework for enterprises across sectors and industries to collaborate.

Policies and institutions to decarbonize the economy and accelerate the structural transformation towards a net-zero carbon emissions economy

> Greening enterprises and jobs by introducing more energy-efficient practices, avoiding pollution, and managing natural resources sustainably can lead to innovation, foster resilience, and generate savings that drive new investment and employment (ILO, 2015).

The greening of economies presents many opportunities to achieve social objectives. Managed well, transitions to environmentally and socially sustainable economies can become a strong driver of net job creation and upgrading. Greening enterprises and jobs by introducing more energy-efficient practices, avoiding pollution, and managing natural resources sustainably can lead to innovation, foster resilience, and generate savings that drive new investment and employment (ILO, 2015). The magnitude of the net cost (at 1–2% of GDP) is small when seen as a means of reducing climate impacts overall and when seen as insurance against the more extreme outcomes if no action is taken.

Government action is central to achieving net-zero emissions globally by 2050

Government action underpins the decisions made by all other actors. An unprecedented level of international cooperation is needed. This helps to accelerate innovation, develop international standards, and facilitate new infrastructure to link national markets. Without cooperation assumed, the transition to net-zero emissions would be delayed by decades. The Net Zero Economy (NZE) depends on actions that go far beyond the remit of energy ministers within federal and local governments: it requires a coordinated cross-government approach. The emissions cuts by 2030 envisioned by the International Energy Agency (IEA) in their Net Zero Roadmap can be mostly achieved with technologies on the market today, but almost half of the reductions between 2030 and 2050 depend on technologies currently under development (Bouckaert et al., 2021), highlighting once again the relevance of R&D support and technology diffusion.

Policy Assessments

Industrial policy: The industrial sector accounted for nearly half of all energy-related GHG emissions in 2019, with some 9 Gt of direct CO2 emissions and another 7 Gt of indirect emissions, resulting in roughly one third of all anthropogenic GHG emissions (Nilsson et al., 2021; Rissman et al., 2020). Emissions-intensive industries such as steel, cement, aluminium and chemicals account for over 70% of direct industrial emissions (Nilsson et al., 2021), yet there is little in the way of actual policy elaboration seeking to encourage these legacy industries towards climate adaptation. These industries are characterized by large capital investments, immovable physical assets, and long investment cycles. These traits, combined with a dearth of specific policy measures, present a significant hurdle on the path to both decarbonization and adaptation. Nilsson et al. (2021) argue that an industrial policy for the transforming of these heavy emitters to net zero requires a structured and coordinated approach. They also suggest a need for policy makers to reshape existing markets to create demand for new innovative processes, building adaptive capacity within governments, a renewed focus on policy coherence and establishing policy for the socioeconomic upheavals inevitable with phasing out existing legacy assets. Reporting

and compliance in environmental, social and corporate governance (ESG) standards is also expected to grow (PwC, 2022).

Fiscal policy: Finance ministries will play an increasingly central role in decarbonizing their economies. Current fiscal frameworks in much of the world originated with different priorities. One of the biggest obstacles to eliminating the global reliance on fossil fuels is their relative cheapness, due to significant subsidies and that prices do not reflect the real price of the long-term environmental damage and health impacts that they cause. In the fiscal realm, policymakers need to take a hard look at current taxes and subsidies and, where possible, realign them, as these price signals send clear directions to private sector activities. Fiscal policy can catalyse private investment in green technologies and adaptation by ensuring the proper regulatory structures are in place and by creating appropriate incentives through a realignment of taxes and subsidies. The Inter-American Development Bank suggests that finance and planning ministries have an essential role in promoting the right fiscal policies toward decarbonization, which could lead to at least 15 million net new and higher-quality jobs for Latin America and the Caribbean (LAC) alone (Delgado, Eguino, & Pereira, 2021).

Energy policy: Deep decarbonization requires an integrated policy approach at all levels. This is certainly true for the structural transformation in the energy sector. In most cases, current policy structures regarding energy are sorely lacking. The National Academies of Sciences Engineering Medicine (2021) illustrate structural deficiency in the US by pointing out policy changes that should be made, such as setting an official emissions budget to get to net-zero by 2050 and establishing an economy-wide price on carbon. Other energy policy initiatives could include a clean energy standard for electricity generation and zero-emissions vehicle standards. These policies set the backdrop for mitigation efforts in the energy sector.

Skills development policy: The ILO defines "Green Jobs" as decent jobs which "improve efficiency in the use of energy and raw materials, limit greenhouse gas GHG emissions, minimize waste and pollution, protect and restore ecosystems, and support adaptation to the effects of climate change" (ILO, 2019). Overall, there will be increased demand for skills related to the design and adoption of technologies, products and processes related to building climate resilience. On a more local level, additional skills will be needed by operators and installers, for example with installation of resilient technologies in water systems, or retrofitting and improving the capacity of heating, ventilation and air conditioning systems in buildings, factories and homes around the world (HM Government, 2011). The agricultural sector is paradigmatic of the skills development transition. It is projected that demand for new and skilled professionals will increase, which will need to deploy new skill sets in anticipatory adaptation measures. Examples of high-tech innovations that will need to become increasingly common include genetic crop modification to develop heat and drought-resistant varieties, new water management techniques, and better crop insurance schemes. Green careers in proactive climate adaptation will also include those related to seasonal climate forecasting, community-based disaster risk reduction, famine early-warning systems, measurement and monitoring infrastructure, water cycle management, sustainable and resilient building architects, engineers, and constructors, among others. As policy makers improve policy elaboration in skills training, they must also have resilience on top of their minds. EBMOs are especially well-positioned to advocate for and improve awareness in this respect.

Institutions and regulatory frameworks

It is widely understood that LDCs face disproportionate risk from the effects of climate change. However, they are usually the least prepared, informationally, and financially, to undertake forward-looking adaptive measures. Mitigation, it may be said, is global; adaptation tends to occur primarily at the local level and must be tailored to the risks specific to the communities in question.

The UNFCCC oversees a National Adaptation Plans (NAPs) programme to support LDCs in climate adaptation designed specifically for each nation's most pressing vulnerabilities. NAPs are designed to be country-driven and based on national circumstances. They recognize that grass-roots communities are the primary stakeholders and rely heavily on local knowledge and participation. A Least Developed Countries Fund (LDCF) was also established as a pipeline for financing adaptation initiatives. As of March 2021, some 126 out of 154 developing nations were formulating and implementing a NAP, and 24 had already completed and submitted their plans (UNFCCC LCD Expert Group, 2012). Preparation and

acceptance of a NAP can open the doors to knowledge and funding, with the LDCF and the GCF both active in funding approved adaptation projects. The GCF is mandated to invest 50% of its resources in mitigation and 50% in adaptation. At least half of its adaptation resources must be allocated to the most climate-vulnerable countries, primarily LDCs (GCF, 2020).

Adaptation must be integrated into existing regulatory frameworks across all levels of government. This requires a higher degree of coordination between national governments, regional development authorities and local municipalities than generally exists today. The IPCC's Sixth Assessment Report (AR6) states that enabling conditions for adaptation must include "...political commitment and follow-through, institutional frameworks, policies and instruments with clear goals and priorities, enhanced knowledge on impacts and solutions, mobilization of and access to adequate financial resources, monitoring and evaluation and inclusive governance processes" (Climate-KIC, 2022). Some adaptation initiatives are public goods that are unlikely to be provided for by the private market. Governments, in this case, can and should be direct investors in adaptation, irrespective of any support by exogenous climate funds. Failing direct investment, governments can also employ regulatory measures, such as loosening capital requirements on banks when lending in support of adaptation or other climate-based measures, as previously noted.

Governments must start by setting unequivocal long-term decoupling targets, ensuring that these are fully supported by explicit, near-term targets and policy measures that set out the pathway and recognize each country's unique starting conditions to help each other deploy new infrastructure and technologies. Governments can bring together researchers, scientists, and climate experts to advice on which technologies are ready for deployment or development and potential new technologies to research. Continuous M&E of pilot projects should identify projects that can be scaled up or withdrawn in real-time.

Just as importantly, governments can stimulate more private involvement in R&D by creating an appropriate policy framework and enabling environment that helps lower risk and unlock the full potential of private investment. Evidence shows that environmental policies lead to technological innovation (Veugelers, 2012). The report by Atalla et al. (2021) highlights that clearer government commitments on infrastructure spending would help increase funding opportunities and provide long-term stability for institutional investors and insurers. Governments can also set a renewable portfolio standard, which mandates producing a certain amount of energy from renewable sources like wind and solar, among others (Behsudi, 2021).

The balance between designing a comprehensive regulatory framework and a avoiding an overly complex policy mix is quite challenging to strike. On the one hand, Acemoglu, Aghion, Bursztyn, and Hemous (2012) show that it is essential that they carbon pricing, regulation, and public support for clean R&D deployed simultaneously and in coordination, as there are substantial complementarities to exploit. Pollin (2016) proposes a just transition fund to add to the policy mix. However, research has also found that an overly complex system of regulations, incentives, and taxes makes impact assessment harder and raises the risk of unintended interaction effects or perverse incentives (OECD, 2013).

Innovation and technological diffusion

There is widespread consensus that innovation is crucial in addressing climate change. Intellectual property rights (IPR) protection is essential in allowing enterprises to justify that R&D investment. This is especially true for SMEs and innovative start-ups, where IPRs are critical in securing early-stage financing. Stable and well-enforced intellectual property protections are prerequisites to technological diffusion on an international scale (ICC, 2015). The International Chamber of Commerce has also identified several policy actions to foster technological innovation in adaptation. These include active measures to attract innovators from other countries while working to stimulate domestic innovation. Fiscal and tax policies can shape behaviour; for example, through tax incentives for R&D. Governments must provide a stable regulatory environment and protect IPRs as a foundation for creating a broad financial infrastructure to support adaptive innovation (ICC, 2015).

The UNFCCC and the international community have taken steps to bridge the knowledge gap and promote policies to encourage innovation and disseminate technological knowledge across LDCs.

These include the UNFCCC Technology Mechanism comprised of the Technology Executive Committee (TEC) and the Climate Technology Centre and Network (CTCN), which can help LDCs identify their own technological needs and address them. The World Trade Organization (WTO) has sought to reduce tariffs on various environmental goods. While these are critical first steps, the lack of absorptive capacity in LDCs remains a significant challenge. Governments need more investment in education and advanced research institutions, ongoing technical training, friendly expatriate visa, and tax policies to encourage skilled foreign workers to immigrate and share their expertise.

Measures to support MSME adaptation

Micro- small- and medium-sized enterprises (MSMEs) represent over 90% of the business population, 60-70% of employment and 55% of GDP in high income countries, with a potentially larger share in LDCs (WTO, 2016). Estimates from OECD economies suggest that small enterprises contribute between 60-70 percent of total industrial pollution. MSMEs have an advantage in that their size allows for nimble reactions and fast decision-making, allowing them to seize new opportunities quickly, which is not always the case with larger organizations (Constantinos, Sørensen, Larsen, & Alexopoulou, 2010). If supported by tailored policies to improve their competitiveness, small enterprises can leverage their agility and innovativeness to become major sources of growth and employment in emerging green industries.

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The annual costs of adaptation are estimated to reach $300 billion by 2030 and $500 billion by 2050, yet current funding is less than one quarter of the 2030 amount (UNCTAD, 2021). While the public sector needs to further step up, it is vital to involve the private sector, and particularly MSMEs in the push towards more resilient local economies. MSMEs typically have few resources to invest in assessing climate risks, but the public sector, international organizations, NGOs, and EBMOs can facilitate the generation of business-specific climate information and assist in its dissemination, through for example early warning systems. Technical assistance and training can serve to build absorptive capacity for new adaptation technologies and provide the business and management skills to identify and indeed to commercialize new adaptation approaches.

Perhaps the largest obstacle for SMEs to pursue green innovation or to adopt green solutions such as energy efficiency investments, are the high upfront investments for acquiring capital equipment or developing new technologies. Being young and capital-light, small enterprises generally lack credit history and assets that can serve as collateral, which leads to limited and costly access to external financing. Some even face challenges to reach a minimum efficient scale and economic viability, making even harder to get access to financing. The combined effect of these constraints is that, without sufficient financial incentives and technical support, small enterprises would not be able to invest in green technologies. It is also not a realistic option for many SMEs to get a loan from a formal financial institution such as a commercial bank (Lashitew, 2021). The IFC estimates that SMEs in emerging countries suffer from a financing shortfall exceeding $2 trillion, with up to 70% of formal SMEs going unserved or underserved by the formal financial sector.

Governments, financial institutions, and enterprises can work together to address the financing gap that SMEs face in the green transition. Governments can establish minimum sustainability guidelines in procurement at the national level. International development finance institutions can use a range of

financial products, in association with technical assistance to help SME lenders implement standards assessments and implement environmental and social management systems. financing models that encourage SMEs to upgrade their production processes to comply with sustainability standards in value chains. Governments are developing green funds to provide priority funding to projects related to the green transition. The idea behind these is to address the diverse financial needs of small enterprises by offering financial support in the form of green grants, green loans, and green bonds.

Enterprises need market demand to flourish. Governments can fund research and development, and they can help to build market demand and awareness of new resilient technologies, for example by undertaking pilot or demonstration projects to increase awareness and demonstrate a business value proposition. The public sector can also help to create linkages across different markets and the value chain. Governments can also promote collaborations and partnerships as a cost-effective means for MSMEs to pool their limited resources. Agricultural cooperatives, for example, can help MSMEs access financial resources, disaster relief, technical knowledge, and access to markets. Governments also have a critical role to play in overcoming the financial barriers many MSMEs are faced with when contemplating investments in climate adaptation. Risk transfer instruments such as government-backed loans and insurance products can shift risk away from MSMEs to the public sector. Risk compensation instruments on the other hand serve to increase expected returns for MSMEs for example through, direct investment, grants, or seed capital.

The role of government as an investor of first resort

A green industrial policy: Countries, regions, or enterprises have a comparative advantage over others in producing a particular good if they can make that good at a lower relative opportunity cost. A green industrial policy is an example of countries investing in developing a future comparative advantage in goods and services that are considered strategic (e.g., energy-efficient appliances, electric vehicles, inputs for the renewables sector, etc.). In this case, their relevance for the net-zero economy that we envision makes them strategic. Green industrial policies include investments, incentives, regulations, and policy supports designed to stimulate and facilitate the development of environmental technologies (Allan, Lewis, & Oatley, 2021). The distinctive feature of green industrial policies vis-à-vis other environmental actions is the policies' intent or goal rather than the instrument used. The intent to restructure and transform the economy into a green economy distinguishes green industrial policy. A green industrial policy can break carbon lock-in by broadening the coalition for change (Allan et al., 2021).

Building green cities: Central government action alone cannot ensure a green transition – cities, regions and communities can also be catalysts for environmental solutions. Cities are home to over half of the world's population and use two-thirds of the global energy demand and characterize many of today's environmental challenges. Lifestyles and sprawl, not urbanization, are at the heart of the problem. Urban sprawl has increased greatly worldwide. The OECD has estimated that emissions could be reduced by almost 1% by 2050 from densification alone. Research shows that dense cities have a range of benefits, including: higher productivity, more innovation, shorter commutes, better access to private services (such as restaurants), cheaper provision of public services, the preservation of green space and a lower carbon footprint (Ahlfeldt & Pietrostefani, 2019). With predictions from the OECD that almost 70 per cent of the world's population will be living in urban areas by 2050, local governments should pursue policies which encourage the building of dense cities. There are several dimensions of the role cities play in shaping adaptation and mitigation and, as such, in accelerating the deployment of renewable energy solutions. Besides transforming the energy mix of a city, these policies can have the potential of transforming the urban landscape and the quality of life of the city's inhabitants. Car-free streets, electrification of the public transport system and solar street lighting are examples of policies that also have a strong connection with a city's walkability, air quality, and liveability

R&D support: Supporting research and development will address the knowledge externality associated with green innovation. Public R&D support is especially crucial for clean technologies in the early stages of development, as it will help to neutralize the base advantage of the older and dirtier installed technologies. Government R&D subsidies can guide the directions of green R&D and account for the fact that green R&D has positive externalities. The majority of existing studies report positive effects of public R&D spending on innovation performance (Bai, Song, Jiao, & Yang, 2019). Government R&D subsidies

can also compensate for the funds' shortage for green innovation and reduce the risks when enterprises urgently demand green innovation to comply with environmental regulations.

Just transition funds: Even though the net result of transitioning to a sustainable global economy is economically beneficial, policymakers would do a great disservice to the cause by denying that some enterprises will lose, and some sectors for which it will be harder to adapt. For example, even though the energy efficiency programmes expansion of renewables will generate large scale increases in job opportunities, during the transition period, countries will have to implement policies to support workers, enterprises, and communities now depending on the fossil fuel industry (Pollin, 2016). For this reason, the European Green Deal included the establishment of a Just Transition Fund. In the US, a Just Transition Fund was put in place as a philanthropic effort to support communities and workers hardest hit by the transition away from coal, however, there is no publicly led or publicly funded initiative to address this issue.

Financial solutions for a sustainable and resilient future

The scaling up of the investments required to achieve net-zero requires a reconfiguration of the global financial system. For instance, while the total amount of financing that the European Green Deal envisages could reach €1 trillion over the next decade, this just represents a third of the European "green investment gap" to reach climate targets for the period up to 2030, as estimated by the European Commission (Claeys, Tagliapietra, & Zachmann, 2019).

Enterprises are typically reluctant to finance activities where risks are high, and technologies and processes have yet to be developed. There is a pivotal role of government to foster the allocation of resources in riskier—and socially desirable—green investments. To achieve the Sustainable Development Goals, governments need to open a new file for green projects and scale up the financing of investments that provide environmental benefits through new financial instruments, such as green bonds, green banks, carbon market instruments, fiscal policy, green central banking, fintech, community-based green funds, among others. These instruments are known as "green finance" (Sachs, Woo, Yoshino, & Taghizadeh-Hesary, 2019).

Governments must also create the conditions for private enterprises to raise long-term funds in areas where financial organizations are not yet willing to make sufficient investments. Solutions include structured finance tailored to specific sectors and mechanisms and policies that mitigate risks or allocate them appropriately to different parties. For instance, in the renewable energy field, feed-in tariffs and contracts for difference have helped drive growth in wind power and solar programmes.

While there is a myriad of green financial instruments, three categories that have gained traction (and scrutiny) in recent years are green bonds, loans, and funds:

- Green bonds are fixed-income securities that fund exclusively green projects with environmental or climate-related benefits and have experienced a massive expansion in the past decade. According to the Green Bond Initiative's latest report, total volumes for the sustainable debt market – including labelled Green, Social and Sustainability (GSS) bonds, Sustainability-linked bonds (SLB) and Transition bonds – are well on their way to an annual $1 trillion, reaching $779.2 billion in the first three quarters of 2021. Regulations need to be advanced to establish a common ground and avoid greenwashing.

- Sustainability-associated loans are debt instruments linked to key performance indicators that include various sustainability goals or ESG ratings, and have no restrictions on usage of funds. U.S. loans with terms tied to environmental, social and governance targets had jumped to about $52 billion by mid-2021, a 292% increase compared with all of 2020, according to Bloomberg data.

- Green funds vary widely in size and scope. The largest such fund is the GCF, which is mandated to a 50/50 split between adaptation and mitigation efforts. The GCF also employs part of its funds to help mobilize financial flows from the private sector to compelling and profitable climate-smart investment opportunities. In the middle of the spectrum, some governments have developed national-level green funds. For small and medium-sized green projects, community-based green funds and village funds could be a suitable solution.

There are three challenges in deploying green financial instruments: identifying the right projects, developing complex plans that involve both the public and private sectors (and often more than one country), and structuring the financing. To succeed, governments must be capable of effective long-term planning, budgeting, and project implementation.

The role of EBMOs in supporting business adaptation and mitigation

As highlighted throughout this report, climate change is bound to constitute a major income shock unless substantial adaptation and mitigation actions are taken. According to the striking report "The economics of climate change: no action not an option" (Guo, Kubli, & Saner, 2021) by the Swiss Re Institute, the world stands to lose close to 10% of total economic value by mid-century if climate change stays on the currently-anticipated trajectory and the Paris Agreement and 2050 net-zero emissions targets are not met. Developing countries could have one-third less wealth than would otherwise be the case should governments fail to act more decisively on climate. All this evidence warrants the increasing awareness of Employer and Business Membership Organizations (EBMOs) that it is in their best interest to move on these two fronts -adaptation and mitigation- in parallel. EBMOS can sponsor concerted action to pressure governments to act on climate change and promote the greening of their members' productive activities. EBMOs can also take measures to help their members adapt to climate change. One of their main objectives is to serve as a source of support and knowledge in fostering business resilience and innovation. Many of the required strategies to promote green jobs can only succeed with the full involvement and participation of workers and enterprises under the leadership of EBMOs.

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The role of EBMOs in the transition towards a sustainable low-carbon economy

According to a recent survey run by the IOE and ILO/ACTEMP (ILO & IOE, 2019), sustainability is one of the five main mega-trends impacting enterprises. Enterprises are increasingly looking for support to understand how to align their strategies with environmental and social objectives. In line with their role as representative organizations of the private sector, EBMOs have an important part to play. They can promote existing best practices so that, on the one hand, enterprises get access to and knowledge of best practices and, on the other, show decision-makers and civil society that enterprises can contribute positively to the achievement of environmental pledges.

EBMOs serve two distinct but equally important roles for their members in the drive for sustainability. The first role is that of advocacy, providing a collective voice for the membership base, which can be used to influence the policy and regulatory environment in which their members function. The second primary role of EBMOs is to provide services to its members. retain membership, EBMOs must provide real value-added to their membership base, and they must be able to adapt to changing circumstances to remain relevant. This flexibility requires a well-designed organizational hierarchy and strong board-level governance, a hallmark of the largest and most successful EBMOs. However, while adaptability is important, EBMOs must also have a clearly defined vision and mission both in terms of advocacy and in the provision of services if they are to be effective on behalf of their members. This represents a fundamental opportunity in decarbonization: by incorporating sustainability, in terms of both mitigation and adaptation, in their mission statements, EBMOs can have a profound impact across industry sectors.

EBMOs with a clearly stated sustainable mission statement can help level the playing field by encouraging, incentivizing, or requiring all members to embrace a common vision toward sustainability.

EBMOs can foster collaboration and communication to create efficient markets that allow enterprises to pursue their goals while still being responsible corporate citizens. EBMOs can act as a broker in dialogues between governments, enterprises, and citizens, seeking a path that is equitable to all stakeholders (ILO and IOE, 2019). For instance, the International Chamber of Commerce (ICC) has encouraged the private sector to increase the pace and ambition of innovative actions for the 2030 Agenda Sustainable Development Goals (SDGs) but also calls on governments to take action by implementing long-term policies, providing an adequate framework and incentives that enterprises can rely upon to tackle the sustainable development challenges while also increasing competitiveness, creating jobs and promoting sustainable economic growth (ICC, 2018).

EBMOs should seek innovative ways of cooperation and outreach, as it is increasingly clear that in this arena, there is no one-size-fits-all collaboration model. Some governments, enterprises, and EBMOs have tackled major issues through broad partnerships, while smaller or localized challenges may be better handled by direct interaction between local enterprises and the public (GRI, 2015). It is likely that building more collaborative economies, in which all participants have a stake and voice in solving issues, will make up the bulk of EBMOs' work in the coming decades.

The 2030 Agenda, structured by the collection of SDGs, has served as a widely recognized roadmap that public and private actors have embraced to varying degrees. Even if the primary responsibility for assessing the implementation of SDGs lies with governments, the private sector has a role to play in the follow-up and review phase of the 2030 Agenda. EBMOs have the expertise, technology, and resources to partner with governments to facilitate the collection of data required to monitor SDGs. According to the 2019 Handbook *Employers' and business member organizations and sustainable development goals* developed by the ILO (ILO, 2019a), EBMOs can support this process by:

- Conducting surveys and collecting relevant data among their members.
- Providing a comprehensive outlook of collective trends and progress on the 2030 Agenda and formulating an employers' agenda contributing to the achievement of SDGs.
- Promoting corporate reporting as a means of monitoring, review, and verification.

Many large organizations are insisting that their suppliers stay in line with their own sustainability and emissions targets, and there is a growing trend of customers and workers demanding that the products they buy and the enterprises they work for are invested in a sustainable business model. Members of EBMOs with a clearly articulated green policy are likely to benefit from significant reputational enhancement, leading to greater success at the enterprise level. This can also feed into a third benefit for EBMOs and their members: EBMOs that demonstrate a strong and public commitment to sustainability are likely to find themselves better positioned with their governmental relationships, making their advocacy role that much more effective on behalf of their membership base.

Strategies for EBMOs to support business mitigation and adaptation to climate change

Research has shown that there exist contagion effects in innovation and adoption of greener techniques (Graziano, Fiaschetti, & Atkinson-Palombo, 2019; Niu et al., 2022). The characteristics of some technologies and techniques are experiential goods with high upfront capital and/or labour costs. By reducing information barriers, EBMOs can speed adoption. They can launch new services that can help members to deal with sustainability-related issues.

EBMOs have a pivotal role in making just transitions work. They are, by definition, active partners in policymaking at the national level. They have relevant expertise in conducive business environments and the needs of enterprises. EBMOs embody networks cutting across sectors that need to be engaged to create economies' coherent and systemic transformation. Finally, they participate as social partners of their trade union counterparts in framing labour market outcomes.

Inter-sectoral dialogue is more important than ever. Understanding interactions among sectors can help policy makers identify synergies and avoid unintended negative impacts. Mitigation and adaptation actions can be synergistic or cause unintended harm in other sectors. Inter-sectoral and inter-regional dialogue facilitated by EBMOs can engender proposals that channel the policymaking process towards symbiotic proposals.

Progress towards a net-zero economy drives new skill needs across a wide range of sectors and occupations. A skills mismatch between the requirements of a greener world and the current educational system can generate frictions in the labour market and delay decarbonizing transformations. EBMOs can contribute to bridging this gap by offering training services on sustainable business practices at different levels and types of work inside a firm. Bridging this gap so that enterprises adopt and embed efficiency and environmental performance improvements throughout their operations and business relationships. Technical and vocational education and training (TVET) play a crucial role in building the required skillset for a just transition. The speed of this transition will therefore be determined to some extent by the responsiveness of training organizations and practitioners in strengthening the available offer, and by the interest and willingness of professionals to engage in initial and/or continuing TVET. In this respect, EBMO can play a key role in identifying skills needs across economic sectors and providing advice for the development of TVET programmes.

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The role of EBMOs bridging the knowledge gap to measure enterprises' carbon footprint

For any company to be sustainable and reduce their GHG emissions over time, it is important to know what their carbon footprint is. For aggregate information on carbon footprints to be useful, there must be a standard for measurement. EBMOs can support members to calculate their carbon footprint by developing "how-to" manuals and trainings, disseminating practical information, and providing technical advice. EBMOs can support member in setting emissions reduction targets grounded in climate science through the Science Based Targets initiative (SBTi). Science-based targets are instrumental for enterprises to know how much and how quickly they need to reduce their greenhouse gas (GHG) emissions to prevent the worst effects of climate change. Some of the benefits associated with setting science-based targets include enhanced competitiveness and business resilience; encouraged intra-firm innovation (intrapreneurship) and the creation of new business models; gained credibility; and gained capacity to influence public polices (SBTi, 2020).

EBMOs can promote and encourage members to report regularly on their carbon footprints. Encouragement can be effective through communicating the advantages of carbon reporting to its members, highlighting, for example, the benefits of efficient energy management and the potential for cost savings, demonstrating environmental credentials and enhancing a company's reputation, meeting

increasingly rigorous supply chain tender requirements, and motivating employees' sense of pride in the organization. Members can also be incentivised, for example, by the bestowing of eco-friendly certifications and green labels. Finally, EBMOs can simply require certain environmental standards to be considered for membership in the organization.

EBMOs can take leadership in supporting certification processes and the adoption of CSRD requirements, and more broadly, environmental, social and governance (ESG) indicators. RespACT – the Austrian business council for sustainable development – is Austria's leading platform for Corporate Social Responsibility (CSR) and sustainable development. The association has developed webinars and materials to support business leaders so that they can prepare their enterprises for the new CSRD requirements (RespACT, 2022).

How can EBMOs support their members in adapting to climate change?

EBMOs can raise awareness among members as to the existential nature of climate change. They can be instrumental in closing the knowledge gap by providing educational and future-oriented skills training programmes. They can be strong advocates for additional government funding to build resilience across their respective industries by highlighting the societal benefits of their members' activities and the need to protect them. They can assist members in navigating the complex array of adaptation programmes already in existence. Business and employers' organisations, as agents of change, can serve as a bridge to connect all stakeholders to promote a loud and resolute collective voice to influence policy, not only in mitigation but also in adaptation.

As discussed throughout this report, the climate discussion is fostering cultural change. This shift is crucial to generate widespread support for a net-zero economy but means that enterprises have to adapt to a changing business landscape with new demands from consumers and employees alike. While SMEs may have lower capabilities to measure and tackle a changing business environment, EBMOs can coordinate or implement surveys of consumer demands and seriously address them, avoiding greenwashing.

One result of living in a warmer planet is the loss of jobs and productivity. The rise in global temperatures caused by climate change will also make the phenomenon of "heat stress" more common. Such excess heat increases workers' occupational risks and vulnerability; it can lead to heatstroke and, ultimately, even to death. The proliferation of so-called "urban heat islands", areas of concentrated heat inside cities resulting from growing population numbers and urbanization, will further intensify the impact of heatwaves, aggravating the risks faced by workers (ILO, 2019b). Consulting EBMOs and addressing business concerns is of the utmost importance for developing and implementing international labour standards to guide governments when designing national policies to tackle occupational safety and health hazards associated with heat stress. Agricultural and construction workers are expected to be the worst affected, accounting for 60 percent and 19 percent, respectively, of working hours lost to heat stress in 2030. A sectoral response to heat stress in agriculture and construction should include technological improvements, skills development, and awareness-raising (ILO, 2019b).

Nonlinear climate risks will require radical change and truly transformative adaptation. Yet enterprises' disclosures on climate risk reveal a preference for incremental or reactive adaptation strategies such as business continuity planning and energy efficiency installations. Recent research has found that more radical – but necessary- strategies such as retreating from certain areas, desalination infrastructure, disaster relief programmes, and coastal ecosystem restoration that begin to consider nonlinear change were notable for their near absence from reporting (Goldstein et al., 2019). Winn, Kirchgeorg, Griffiths, Linnenluecke, and Günther (2011) find that organizations' enduring assumption that "current economic and social conditions will continue to flourish regardless of unfavourable biophysical conditions in Earth's natural and climate systems" predispose them to a risk management approach that is inadequate in the face of the scope, scale and systemic uncertainty associated with climate change impacts. EBMOs, with their data and outreach capabilities, can provide fora in which informational barriers are bridged, and radical adaptation for radical change is discussed in the business agenda.

Finally, for EBMOs to be able to support enterprises in addressing these challenges and to represent the collective voice of business to the public authorities even in difficult circumstances, they need to give due attention to **building their own resilience.** While there is no one-size-fits-all formula, resilient EBMOs tend to share common characteristics, such as: a solid governance structure; a high degree of member centricity; valuable services that address clients` most pressing needs; multi-skilled staff who can move between different roles; strong alliances with other key-actors; functional risk management systems; as well as research, leadership, and communication capacity on key business environment issues (ILO, 2021a).

This report presents substantial evidence of an exciting way forward to embark on the private sector, particularly MSMEs, in the green transition. It also offers an overview of the perils of not doing so.

This report presents substantial evidence of an exciting way forward to embark on the private sector, particularly MSMEs, in the green transition. It also offers an overview of the perils of not doing so. All this evidence warrants the increasing awareness of EBMOs that it is in their best interest to move on these two fronts -adaptation and mitigation- in parallel. This report concludes that EBMOs are a source of support and knowledge in fostering business resilience and innovation. The required comprehensive strategies to promote green jobs and create resilient economies can only succeed with the full involvement and participation of workers and enterprises under the leadership of EBMOs.

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